

Figure 1 (page 1 of 3)

ATGATGTGCTTAAAGATCCTAAGAATAAGCCTGGCGATTITGGCTGGGTGGGCACTCTGT 60
 M M C L K I L R I S L A I I A G W A L C (20)
 TCTGCCAACTCTGAGCTGGGCTGGACACGCAAGAAATCCTTGGTTGAGAGGGAAACACCTG 120
 S A N S E L G W T R K K S L V E R E H L (40)
 AATCAGGTGCTGTGGAGGAGAAACCTTGTGGCTGGGGCCAGCTTCGAAGACCCAGA 180
 N Q V L L E G E R C W L G A K V R R F R (60)
 GCTTCTCCACAGCATCACCTCTTTGGAGTCTACCCAGCAGGGCTGGGAACCTACCTAAGG 240
 A S P Q H H L F C V Y P S R A G N Y L R (80)
 CCTTACCCCTGGGGGAGCAAGAAATCCATCATACAGGACGAGCAAAACCACTGAA 300
 P Y P V G E O E I H H T C R S K P D T E (100)
 GGAATGCTGTGAGCCTTGTTCCTCCAGACCTGACTGAAAATCCAGCAGGACTGAGGGGT 360
 G N A V S L V P P D L T E N P A C L R G (120)
 CCAGTTGAAGAGCCCGCTCCCTAGGGGTAGGGGATAGTCTTATGGCAATCTGAGCTG 420
 A V E E P A P W V G D S P I G O S E L (140)
 CTGGGAGATGATCACTCTATCTCCGCAATCAAGATCCAGGAGTCTCTAGGTGAGGCC 480
 L G D D D A Y L G N Q R S K E S L G E A (160)
 GGGATTCAAAAGCCTCAGCCCTGGCTCCACTACTACCGCGCATTTTCACAAACCTG 540
 G I Q K G S A M A A T T T T A I F T T L (180)
 AACGAACCCAAACAGACCCCAAGGAGGGGCTGGGCCAAGTCCAGGAGGCTGGCCAA 600
 N E P K P E T Q R P G W A K S R Q R R Q (200)
 GTGTGAAGAGGGCGGGCGAAGATGGGCGAGGAGTCCGGTATCTCTTCACATTTCCAA 660
 V W K R R A E D G Q G D S G I S S H F Q (220)
 CCTTGGCCCAAGGATTCCTTAAACACAGGGTCAAAAAGAGTCCACCGGAGGAAAGCAAC 720
 F W P K H S L K H R V K K S P P E E S N (240)
 CAAAATGCTGGAGGCGCTCCTACCGAGAGGAGACCTTAACTCCCAAGTAGGACTG 780
 Q N G G E G S Y R E A E T F N S Q V G L (260)
 CCCATCTTATATCTCTCTCCGAGCGGGAGCGCTCTCTCTCCAGAGTCTGGCT 840
 F I L Y F S G R R S K L L L R P E V L A (280)
 GAGATTCCTCCGGGAGCGCTTCACTAGGAGCCTGCTTAAACCGGAGGAGGACAGAA 900
 E I P R E A F T V E A W V K P E G G Q N (300)
 AACCCAGCCATCATCGCAGGTGTGTTGATAACTGCTCCCACTCTCACTGACAAAGG 960
 N P A I I A C V F D N C S H T V S D K G (320)
 TGGCCCTGGGGATCCGCTCAGGGAAGGACAGGGAAGCGGGATGCTCGCTCTCTCTTC 1020
 W A L G I R S G K D K C K R D A R F F F (340)
 TCCCTCTGACCGGACCGGCTGAAGAGAGCCACCATCTTGATTAGCCACAGTCTGCTACCAA 1080
 S L C T D R V K K A T I L I S H S R Y Q (360)
 CCAGGCACATGGACCCATGTGGCAGCCACTTACGATGGACGGCAGTGGCCCTGTATGTG 1140
 P G T W T H V A A T Y D G R H M A L Y V (380)
 GATCCCACTCAGGTGGCTAGCACTCTAGACCACTCTGGTCCCTGAGCAGCCCTTCATG 1200
 D T Q T V A S S L D Q S G F L N S P F M (400)
 GCATCTTGGCGCTCTTTCTCTCTCCCGGAGACAGCTCTCAGCATCCCACTATTTCCGT 1260
 A S C R S L L L G G D S S E D G H Y F R (420)
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 G H L C T L V F W S T A L P Q S H F Q H (440)
 AGTTCTCAGCATTCAAGTGGGAGGAGGAAGCGACTGACTTGGTCTTGACAGCGAGCTTT 1380
 S S O H S S G E E E A T D L V L T A S F (460)
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 L Q G F E F E F E I L S F L Q P P L C G (500)
 CAAACACTCTCTCAATGTGGAAATCATCTCCAGTACAAATGATACTGGCCCTTCGG 1560
 Q T V C D N V E L I S Q Y N G Y N P L R (520)
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 C E K V I R Y Q V V N I C D D E G L N F (540)
 ATTGTGAGTGAAGAGCAGATTGCTCTGACGACGAGGCACTGAAAGAGGCTTCAGCGGC 1680
 I V S E E O I R L Q H R A L N E A F S R (560)
 TACAACATCAGCTGGCAGCTGAGCGTCCACAGGTCCACRATTCCACCTGCGACACCGG 1740
 Y N I S W Q L S V H Q V H N S T L R H R (580)
 CTTGTGCTTGTCAACTCTGAGCCGAGGATGGCAATGACCATTTGTGACCCCGAGTGT 1800
 V V L V N C E P S K I G N D H C D F E C (600)

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Figure 1 (page 2 of 3)

GAGCACCACCTCAGGCTATGATGCCGCTGCTGCGGCTGCGAGGCGCGCTGCTACTCC 1860
E H F L T G Y D G G D C R L Q G R C Y S (620)

TGGAAACCGCAGGGATGGGCTCTGTTCAGCTGGAGTGTAAACAACATGCTGAACGACTTTGAC 1920
W N R R D C L C H V E C N N M L N D F D (640)

GACGGAGACTGCTGCGACCCCAAGGTGGCTGATGTGCGCAAGACCTGCTTTGACCCTGAC 1980
D G D C C D P Q V A D V R K T C F D P D (660)

TCACCCAGAGGGGCATACATGAGTGTGAAGGAGCTGAAGGAGGCCCTGCGAGCTGAACAGT 2040
S P K R A Y M S V K E L K R A L Q L N S (680)

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T H F L N I Y F A S S V R E D L A G A A (700)

ACCTGCGCTTCCGACAGGAGCGTGTCACTCACCTGGGTGGCTTGTCTCAGCCGAGCA 2160
T W P W D K D A V T H L G G I V L S P A (720)

TATTATGGGATGCTCCGACACCGAGACCATCATGAAGTGGGACATGTTCTGGGA 2220
Y Y G M P G H T D T M I H E V G H V L G (740)

CTCTACCATGTCTTTAAAGGAGTCAAGTGAAGACAACTCTGGAATCAGCCCTGCAAGCA 2280
L Y H V F K G V S E R E S C N D P C K E (760)

ACAGTGCATCCATGGAAACGGGAGACCTCTGTGCGACACCGCCCGCACTCCCAAGAGT 2340
T V P S M R T C D L C A D T A P T P K S (780)

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E L C K E P E P T S D T C G F T R F P G (800)

GCTCCGTTCAACCACTACATGAGCTACAGGATGATRACTGCACTGACAACTTCACTCCT 2460
A F F T N Y M S Y T D D N C T D N F T P (820)

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N V A R M H C Y L D L V Y Q Q W T E S (840)

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R K P T P I P I P P M V I G Q T N K S L (860)

ACTATCCACTGGCTGCCCTCTATTAGTGGAGTCTATATCAAGGCGCTCAGCCAGCTTC 2640
T I H W L P P I S G V V Y D R A S G S L (880)

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C G G A C T F R C T F R Q Y V H T A S S R (900)

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R V C D S S G Y W T P E E A V G D P D V (920)

GATCAGCCCTGCGAGCAAGCTTACAGGCTTGGAGCCCTGAGGTCCACTGTACCATG 2820
D Q P C E F S L Q A W S P E V H L Y H M (940)

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N M T V P C F T E G C S L E L L F Q E P (960)

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V A D T T L W V T S F F M E S S Q V (980)

CTCTTTGACACAGAGATCTTGTGGAACACAGGAGTCAAGTGCACCTGCGCCCTTACAC 3000
L F D T E I L L E N K E S V H L G P L D (1000)

ACTTTCTGTGACATCCCACTCACCATCAAACTGCACCTGGATGGGAGGTGTGCGGGGTG 3060
T F C D I F L T I K L H V D G K V S G V (1020)

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K V Y T F D E R I E I D A A L L T S Q P (1040)

CACAGTCCCTTGTGCTTGGCTGCGAGGCTGTGAGGTACCAGGTTCTCCGCGATCCCCA 3180
R S P L C S G C R P V R Y Q V L R D P P (1060)

TTTGCCAGTGGTTTGGCCGTGGTGGTGACATTTCTCACAGGAAGTTACGAGCGTGGAG 3240
F A S G L P V V T H S M R K F T D V E (1080)

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V T P C Q M Y Q Y Q V L A E A G G E L G (1100)

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E A S D P L N H I H C A P Y C G D G K V (1120)

TCAGAGAGACTGGAGAGAGTGTGATGAGAGACCTTGTGAGCGGAGATGGCTGCTCC 3420
S E R L G E E C D D G D L V S C D G C S (1140)

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K V C E L E E G F N C V G E P S L C Y M (1160)

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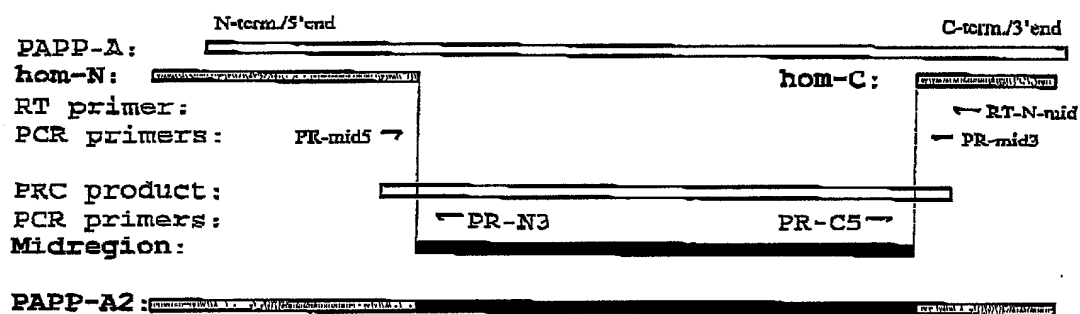
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109930000 1022001

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D K K K C P V S L V T G E F H S L I C T	(1220)
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S Y H C D B L N H R F L T G W F P C V A	(1240)
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S E N E T Q D D R S E Q P E G S L K K E	(1260)
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D E V W L K V C F N R P C E A R A I F I	(1280)
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L T D V R G S N H S L G T Y G L S C O H	(1320)
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N P L I I N V T H H Q N V L F H H T T S	(1340)
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V L L L N F S S P R V G I S A V A L R T S	(1360)
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S R I G L S A P S N C I S E D E G Q N H	(1380)
CAGGACAGAGCTGTATCCATTCGGCCCTGTGGGAAGCAGGACAGCTGTCCCTCATTGCTG	4200
Q G Q S C I H R P C G K Q D S C F S L L	(1400)
CTTGATCATGCTGATGTGGTGAAGTGTACCTCTATAGGCCAGGTCTCATGAAGTGTGCT	4260
L D H H A D V V N C T S I G F G L M C K C C A	(1420)
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I T C T Q R G F A A L Q A S S G Q Y I R F M	(1440)
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Q K E I L L T C S S G H W D Q N V S C L	(1460)
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E C T K F L K R C S I S C V P F A K L Q	(1500)
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G L S P W L T C L L R D C L W S L L F K I Q C L	(1520)
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C L Q D N H D V G T I C K Y E C K F G Y	(1560)
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Y V A E S A E S G K V R N K L L K I Q C L	(1580)
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V F F Z G M Y E R C T N G P S L D S Q C V L	(1620)
AATGTATAACAGGAACCTGAAGAGCTTCCCATCTCTCTGCACTAAAGAGGCGCTGTGGACC	4920
N C N O E R E K L P I L C T K K G L W T	(1640)
CAGGAGTTTAAGTTGTGTGAGAACTCTGCAAGGAGATGCCCAACCCCTCTCAGAGCTG	4980
Q X F K L E C E N L Q G E C F P P S E L	(1660)
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N S V E Y K C E Q G Y G I G A V C S F L	(1680)
TGTGTAATCCCCCAGTGACCCCGTGATGCTACCTGAGAAATATCACTGCTGACACTGTG	5100
G V I P P F S F V M L F E N I T A D T L	(1700)
GAGCACTGGATGGAACCTGTCAAAGTCCAGAGCATTGTGCACTGCGCGGCTCAATGC	5160
R H W N E P V K V Q S I V C T G R R Q W	(1720)
CATCCAGACCCCGTCTTAGTCCACTGCATCCAGTCAATGTGAGCCCTTCCAAGCAGATGGT	5220
H P D P V L V H C I Q S C E P F Q A D	(1740)
TGCTGTGACACTATCAACRACCGAGCCCTAGCCACTATGACGGGGAGACTGCTGCTCT	5280
W C D T I N R A Y C H Y D G G D C C S	(1760)
TCCACTCTCTCCAGAAAGGTCAATTCATTTGCTGCTGACTGTGACCTGATGAGTGC	5340
S T L S S K K V I P F A A D C D L D E C	(1780)
ACCTCCCGGGACCCCAAGGCAGAGAAAACTACTAA	5376
T C R D P K A E E N O *	(1791)

Figure 2 (page 1 of 1)



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Figure 3 (page 1 of 1)

PA2 ~~.....~~ 120
PA ~~.....~~ 80

N-terminal residue of mature PAPP-A2 (Ser-234)

PA2 AVESFAATVVEDSPFGESELLGDDDAYLGNQSKESLGEAGIKGKSAMAATTITTAIPTLTNRKFKETQRRGNAKSRQRQVNAKRAEDGQDSGSSIHFPWPKHSLKHVKKSPPEESN 240
PA ~~.....~~

N-terminal residue of mature PAPP-A (Glu-61)

PA2 QNGGEGSYREARTFNSQVGLFIFYSGRRERILLRPEVLASIPREAFIVEAVKPEGGQNNFAITAGVDMNISTVSDKGWALGRLSGKXKRDARFFFSLEMDAVKCATILISHRYQ 360
PA ~~.....~~ 192

PA2 FGTWTHVAATYDGRHMAIYVDGTQVASSLDOSGGLNFFMAISRSLLGDSRRGNYFRCLCTLVFWSTALDQSHFQSSQHSSEETDVLVTASFEFVNTSEVWTFRPUYFRLEV 400
PA PGQNVYLAATYDQGMKLYNGAQVATSGEGVGGIFSLTQKQKVLMLGG--SALNNHYRGYIEHFSLNKVARTOREILSDMETHGARTALPQLLQENMDNVKHAWSFMKGSSPKVEF 310

LNR1

PA2 LQCFEPPEILGLDGLSGTQVSNVLLISQYNQWFLGGERVIRYQVNNIDDESINPVSDDCTIKQHEALNFAFRYNISSQLSVHQVHNSTARRRVVIVNEPFSKIGNDRDOPET 600
PA QNANG--FLLDTSEFETLSCITLQNTVEIASYGLSSFRQFKVYRVVNLVDDHKNFTVTREQVDQHQHQLAEAFKQYNIQWELDLVENSSLRRLILANADISKIGDENHOPET 478

LNR2

PA2 LNPFLTGYDGGGK--CGGNYSSNNRDLGLSVENNNMLNDFDGGGDPQVADVKTTPDPSFKRAYMSVKELKEALQLNSTHPLNTYFASSVREDLAGAATWPMWDKDAVTHLGGIVLSP 719
PA NHTLTGHDGQCDRHLEHHAFFVKQHNGVADNENYERFNFDSGGLQDFETINVTQTFDPSFTHRAYLDVNRKMLIKLDGSEHLNTPAKSSRELACVATWPMWDKDAVTHLGGIVLSP 548

PA2 AYTGMPGHTDTMIHNVGRLVGLVYVFKGVSRSSNDPDKETVPSMETGDIADTAPTFKSELDEPEPTSDTCAPTFPCCADFTNMSXWDMETDNPETNQVARMHVLDLVYQWTF 829
PA SFYGMPCHTHMIHNVGRLVGLVYVFKGVSRSSNDPDKETVPSMETGDIADTAPTFKSELDEPEPTSDTCAPTFPCCADFTNMSXWDMETDNPETNQVARMHVLDLVYQWTF 566

PA2 BREKPTPIPIPMVIGQTKSLTIHLLPISGVVYDRASGSLGCAETFDSTFRQVYHTASSRRVDSGXYTFEEAVGFPDVDPHPEPSLQAWSPEVHLYHMMVTFP-TEGSLLELFO 956
PA BRKPAPVALAQVIGKTTDGVTLMEFFPIDGHTFERELGSAHMLLEGRILVQYASNASSFMPKSFSGHNSPREAEHEDVQPKGSSVRTWSENSAVNFTVPPAPPEPQGLYLEFL 788

PA2 HPCQADTLITVNT--SEFMESGQVLEETELLENKESVHLGFLDTEIDPLITIKH-VDGKVSQVKVYTFDERIEIDAALLTSQPHSPISGCAFVRYQVLRDFFASGLPVVTHSHRK 1075
PA HPLVSESLTIWTFVSTDMUSSGAVNDIKLAVSGKNLSLGEQNVNVDVPLTIRLMDVGEVYGIQIYTLDEHLEIDAALLTSADTFLGLQKFLKYVVRDPPLOMDVAGYL-HLNK 907

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PA SVSHQDCC--FQWVLIQPPAASQVATKVIDLSSEISQWANYCTGYTYGQAQT--FNLRTTFQFVAAAVFVHVTVPGITYGQKQETISVQLLDTKQSDHLCYH 1135

SCR1

PA2 GLCQNNPLIINTVTHQNVLFPHITSVLLNFPFRAVCIQAVALKTOGRIELGAPSNLYSEDEGQNHQSQCTHNNKGRQDPSILLDDADVNNETISGFLMKPALTQORGFALQASSG 1434
PA VLSENNPLIINTVTHQNVLFPHITSVLLNFPFRAVCIQAVALKTOGRIELGAPSNLYSEDEGQNHQSQCTHNNKGRQDPSILLDDADVNNETISGFLMKPALTQORGFALQASSG 1253

SCR2

PA2 QIIRFMOR--LILLTGSGHNDQNVSLLEVHGVDPFSLVNYANFSSEGTIKFLKRSISTVPPAKLQGLSPWLTLEDGLWSLPEVYKLEDAFFIILNANLLPFLQDNHVDGTG 1552
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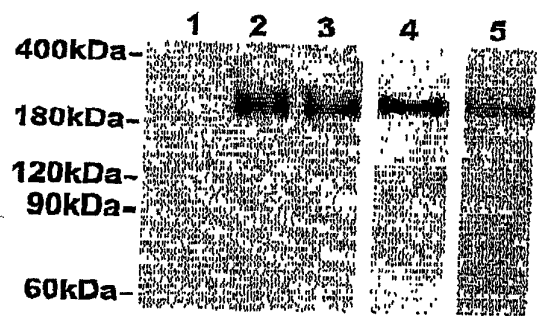
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LNR1

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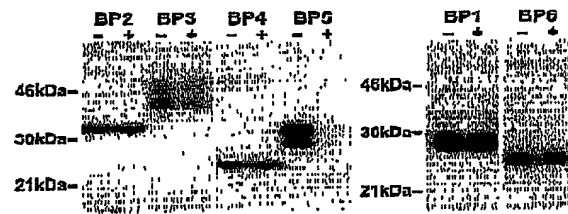
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Figure 4 (page 1 of 1)



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Figure 5 (page 1 of 1)



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Figure 6 (page 1 of 1)

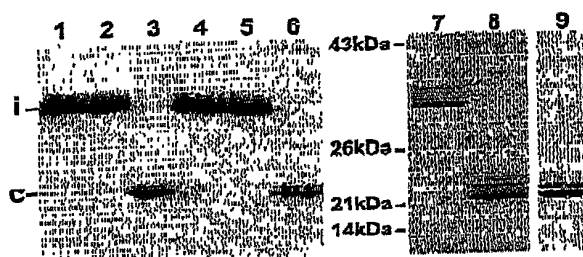


Figure 7 (page 1 of 2)

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AATCAGGTGC	TGTTGGAAG	AGAACGTTGT	TGCTGGGGG	CCAACTCTTC	AAGACCGAGA	180
GCTCTCCAC	AGCATCACTT	CTTTGGAGTC	TACTCCAGCA	GGGCTGGGAA	TACCTTAAGG	240
CCCTTACCOC	TGGGGGAGCA	AGAAATCCAT	CTATACAGGAC	GCAGCAAAAC	AGACACTGAA	300
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TGGGCTCTGG	AGGTCGACTC	AGTGAAGGAC	AAGGGAAGG	GGGATGCTCG	CTTCTCTCTC	1020
TCCCTCTGCA	CCGACCGCGT	GAAGAAAGCC	ACCATCTTGA	TTAGCCACAG	TGCGTACCAA	1080
CCAGGACCAT	GGACCGCATG	GGCAGCCACT	TAGCATGGA	GGCACAATGG	CCTGTATGTG	1140
GATCCACATC	ACCTGGCATG	CACCTCTAGC	CAGTCTGTCT	CCCTGAGACG	CCCGTTACTC	1200
GCATCTTGCC	GCTCTTTGCT	CCCTGGGGGA	GACAGCTCTG	AGGATGGGCA	CTATTTCCGT	1260
CCACATCTGG	GCATCACTCT	TTTCTGTGTG	ACGCGCTCTG	CAACAAGCCA	TTTTCAGCAC	1320
AGTTCTCAGC	ATTCAAGTGG	GGAGGAGGAA	CGCACTGACT	TGGTCTTGAG	ATGGAGCTTT	1380
GACCTCTGTA	ACACAGAGTG	GCTTCCCTTT	AGAGATGAGA	AGTACCCAGG	ACTTGAGGTT	1440
CTCCAGGGCT	TTGAGCCAGA	GCTTGAGATT	CTGTCCCTTT	TGACGCCCCG	ACTCTGTCCG	1500
CAAAAGCTGT	GTGACCAATG	GGAAATTGAT	TCCAGTACA	ATGGATACGT	GGCCCTCTCG	1560
GGAGACAGAG	TGATAGCGTA	CCACTCTGTG	AACTATCTCT	ATCAGTAGGG	CGTAAACCCG	1620
ATTGTGAGTG	AGGAGCAGAT	TCTCTCTGAC	CACGAGGCAC	TGAATTGAGG	CTTCAGCCGC	1680
TACAACATCA	CCTGCGAGCT	GAGGCTCCAC	CAGGTCACA	ATTACACCTT	GGCACACCGG	1740
GTGTGCTCTG	TGAATCTGTA	CGCCAGCAGG	ATTGGCAATG	ACCATTTGTA	CCCGCAGTGT	1800
GAGCACCCAC	TACAGGCTTA	TGATGGGGGT	TGACGGCCGC	TGACGGCCGC	CTGCTACTTC	1860
TGAACCGCA	GGGATGGGCT	CTGTCACTGT	GAGTGTAAAC	ACATGCTGAA	CGACTTTGAC	1920
CACCGACACT	CTGCTCGACG	CGAGGTGCTT	GATGTGCEGA	AGACCTGTCT	TGACCTTGAC	1980
TCACCCAGAG	GGGATACAT	GAGTGTGAGG	GAGCTGAGG	AGGGCTCTCA	CTGGAACCAT	2040
ACTCATCTCC	TGAACATCTA	CTTGTCCAGC	TCACTGGGGG	AAGACCTTGC	AGGTGCTGCT	2100
ACCTGCGCTT	GGGACAAGG	CGCTGTCACT	CACCTGGGTT	GCATTGTCTT	CAGGCCAGCA	2160
TATTAGGGA	TGCTGGGCA	CACCGACACT	ATGATCCATG	AAGTGGGACA	TGTTCTGGGA	2220
CTCTACCAT	CTTTTAAAGG	AGTCAGTCAA	ACAAATCTCT	GGATCACTCC	CTGCAAGGAG	2280
ACAGTGGCAT	CCATGGAAC	GGGAGACTCT	TGTCGCGACA	CCGCCCCCAC	TCCCAAGAT	2340
GAGCTGTGCC	GGGAACCCACA	CCCCACTAGT	CACACTCTCT	CTTTCAGTGC	CTTCCAGGG	2400
GCTCCGTTCA	CCCATATCAT	GAGCTACAGG	GATGTAACCT	GCATCTGACA	CTTCACTCTT	2460
AACCAACTCG	CCCGAATGCA	TTCCTATTGT	GCCTTAGTCT	ATCAGAGTGT	GACTGAAAG	2520
AGAACTCTCA	CCCCATCTCC	CAITTCACCT	ATGGTCATCG	GACAGACCAA	CAGTCCCTCT	2580
ACTATCCACT	GGCTGCTCTC	TATTAGTGA	GTGTGATATG	ACAGGGCTCT	AGGCGAGCTT	2640
TGTGGCGCTT	GCAGTGAAGA	TGGGACCTTT	CTTCAAGTAT	TGCACAAGC	TCTCTCCGCG	2700
CGGCTGTGCT	ACTCTAGAGG	TATTGGAGC	CCAGAGGAGG	CTGTGGGGCC	TCTGTATGTG	2760
GATCAGCCCT	GCGAGCCBAG	CTTACAGGCC	TGGAGCCCTG	AGGTCACACT	CTACCACTG	2820
AACATGAGGG	TCCCTTCCGC	CACAGAGGCT	TGTAGCTTGG	AGCTGCTCTT	CCATCACCTG	2880
GTCGAAGCCG	ACACCCCTAC	CTGTGGGCTC	AGTCTCTCTT	TGATGGAGTC	CTCGAGGCTC	2940
CTCTTTGACA	CAGAGATCTT	GCTGGAAAB	ACAGGATGAG	TGCACTGGGG	CCCCCTAGAC	3000
ACTTTCTGTG	ACATCCCACT	CACCATCAA	CTGCACTGCT	ATGCGCAACT	CTGGGGGGTG	3060
AAAGCTCTAC	CTTTTGATGA	GAGGATAGAG	ATTGATGACG	CACCTCTGAG	TTTCTGACCC	3120
CACAGTCCCT	TGTGCTCTGC	CTCAGGCGCT	GTCACTTACC	AGGTTCTGCG	CGATCGCCCA	3180
TTTGGCAGTG	GTTTGGCGCT	GGTGGTGACA	CAITCTCACA	GGAGTTTCAC	GGACGTGGAG	3240
GTCAACACTC	CACAGTGTA	TGAGTACCAA	CTTGTAGCTG	AAGCTGAGAG	AGAACTGGGA	3300
GAGGCTTCTG	CTGCTCTGAA	CCACATTCAT	GGAGCTCTCT	ATTGTGGAGA	TGGGAGGCTG	3360

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CAGAGGAAA TTCTGCTCAC ATGTTCTTCT GGGCACTGGG ACCAGAATGT GAGCTGCCCT 4380
 CCGCTGGACT GCGCTGCTTC CCGCCGCTCT TTCTGAACT ATCGAAACTT CTGCTGCTCA 4440
 GAGGGGAACCA AATTTCTGAA ACGCTGCTCA ATCTCTTGTG TCCCAACGAGC CAGCTGCTCA 4500
 GGACTCAGCC CAGGCTGAC ATCTCTTCAA CATGGTCTCT GGTCTCTCCC TGAAGTCTAC 4560
 TCGAAGTTGG AGTGTGATGC TCCCTCTATT ATTCTGATG CCAACTTGCT CCTGCTCAC 4620
 TGGCTCCAGG ACAACCAAGA CGTGGGCACC ATCTGCAAT ATGAATGCAA ACCAGGGTAC 4680
 TATGTGGCAG AAGTGCAGA GGGTAAAGTC AGGAACRAGC TCCTGAAGAT ACAATGCTCA 4740
 GAAGGTGGAA TCTGGGAGCA AGGCAGCTGC ATTCTGTGG TGTGTGAGCC ACCCCCTCT 4800
 GTGTTTGAGG GCATGTATGA ATGTACCAAT GGCCTCAGCC TCGACAGCCA GTGTGTGCTG 4860
 AACTGTAAAC AGGAACGTGA AAGCTTCCC ATCTCTGCA CTAAAGAGGG CCTGTGGACC 4920
 CAGGAGTTTA AGTTGTCTGA GAATCTCAA CGAGAATGCC CACCAACCCC CTCAGAGCTG 4980
 AATTCTGTGG AGTACAAATG TGAACAGGA TATGGGATTG GTGCAGTGTG TTCCCATTTG 5040
 TGTCTAATCC CCCCCTGTA CCCCCTCATC CTACCTGAGA ATATCACTGC TGACACTCTG 5100
 GAGCACTGGA CGGTAACTGT CAAAGTCCAG AGCATTGTGT GCACTGGCCG GCTCAATGG 5160
 CACCCAGACC CCGTCTTACT CCACTGCATC CAGTCAATGT AGCCCTTCCA AGCAGATGGT 5220
 TGGTGTGACA CTATCAACAA CCGAGCCTAC TGCCACTATG ACGGGGGAGA CTGCTCTCT 5280
 TCCCACTCT CCTCCAGAA GGTGATTTCA TTTGCTCTG ACTGTGACCT GATGAGTGC 5340
 ACCCTCCGGG ACCCCAGAGC AGAAGAAAT CAGTAACTGT GGGAAACAGC CCCCCTCTCC 5400
 ACTGCTCAG AGCCAGTAAG AAGAGAGGC CGACCCAGGA GGAACAAAG GGTGAATGAA 5460
 GAAGAACAA CTGAAATGG AAGAAAGAGG AAGAGCATGA AGGATCTTAT AAGAAATCCA 5520
 AGAGGATATT GATAGCTGTG AACTAGTICA TCAAGTGGCC CAGTAGGAG AGRATCATAG 5580
 GCAAAGTTT CTCTAAAGTG SCAGTTGATT AACATCCAAG GGGAAATATG ATAGATATAT 5640
 AAGGACCTTC CTCCCTCAT TATATTCTAT TAAATCTTAT CCTCAACTCT TGCCCTGCTC 5700
 TCCGCTCCAC CCCCCTGCAA CTACTCAGTC CCACCCAACT TGTAAACCAA TACCAAAATA 5760
 CTAGAGGAGA AGTTGGCAGG GATACITGTA ATACCATTT TGAATGGATT GCGATCTTTC 5820
 AGACCTTGTG TGCTGTCAAG TGGCTCTTT TCTTTTGTG TAGTTTCCGT TAAATATGA 5880
 AGTTAGTTAT TAATCTTTTA TAAGTATTTA AACATAATTA TATAAATATA TTATATATAT 5940
 TATATTTTTC GCTCTTACT AAGCTAATAA TTATTCATTS TTCCACACAT GCTGCTGTGA 6000
 AGTTCACTT CAAGATGAAT GTTGAGACTT TGAAGACAGA AAGCCAACTT ATTTTCCCAT 6060
 CTTTCTATGG ATGCGGATTC GCAGGTTGAA TGGGAAGTAC AGAAGGAGAG AGRATATTA 6120
 GATGGAATTC TGGATGCTAG CATGTAAAGC TAATCATCTT TTTTCTTATG ACCTGGGAGC 6180
 TGGGCCCTTC TTATGACCAA GCAGATGGGG AGTTGGAATG GTGCTACTAA GAGGCATAGG 6240
 AAGTTGAGTG TGAATACCAT TGGTGATGGG TCCAGGAGAA CTACACTATC ATTCTTCAAT 6300
 ATCTGTCCAC AAGGATATA CTACTTTTG TCACTTCTC ARAACTTCCA ACTGGATCG 6360
 GTGAGACCTA GGAATTTCTG CACTTCCAA CATGCTCTGT CCAAGTCTGG CTGTCACTCA 6420
 GTCAACAAAT TTGACTATG GCCCTTCTC TGATCACCAG GATTACAGGA ACTCACACAC 6480
 TCTCTACTAT TGGCTGTAG TCTACTTCT TGTTAGAAGT CTCCAAGTCT GGCAGTCA 6540
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 GGGACCAAT CAAACAAACG CCAAGAGGTG TCAGGTTAA ATCCAGGCCC GGGCATGAGA 6660
 TCGCAAGTGA TCAGGGAGAG TCGGTCTCTG TTCCAGTCT CCAAGAGAGA CCAAGTGGG 6720
 TCCCTTGAGC AATGAAGAA CTGAGATAAA TTCTCTTCAA GTATCATGTA CAAATCTGT 6780
 GAGCCAGAGA TTTTGACTTG AGCAAGCCAT GGAATGCAAT GAGCAACAGC TGACACTCTC 6840
 TGGGAGACA GAAGAAITTC AACTATTTAA TGTCCATTT GTTGTTTTA CCTTCTTAA 6900
 TCCAATAGAT GGAATGCACA TGAAATGACC ATATTAAGCC TCTCTOTATT TACATCCAG 6960
 GCTCACTGGG ATGTGATCTA CTGCAGTTAC ATTTTCTTGT AACGGTTTCT GGAATACAC 7020
 CTAGGGAGAG TGACTAACCA CCACTTTTCT GTTAAACATT CTACTTTTAC TCATTTTACG 7080
 AAGGCTGTGA GTGAGCTTG TCTCTTTTAA AGTTTCTTCT CCAATGGAAA CCAAGAACAG 7140
 ACAAATTTA CACTCAGCT GTGGTCTCT CTCACTCTCT CCTCTTTTGC TTTGACCA 7200
 GTTTTCTAC TCTTCCATC AACACTAGAG CAATGGCTGT GCAAAATAGGA ATAGGAAATA 7260
 CTACCACAT GATAGAAATA TTATCCACAC TATCAGTAG GGAAGAACAA TATCCTGAAA 7320
 GAGGATAAA CACGAATAAG GTGATGTACC CACATTAATC TGTGGGTTG TCGAATGAGG 7380
 GTTGCAAACT TATTGGCAAA AGGAAGAGAG AGAGTTCACC CATTCAAAA AACCCTTTG 7440
 TCTACTAATC TCTAGTGTAA AGAAATGTA GTTCAGATAC CATTCATGT CTGGGTCTAT 7500
 CCTAGTGGC CCAAGAGAA CAAACATATT TATTCTTGGG ATTCTGATG GCTTCAATAT 7560
 GCRAAGGACA ATGGAAGAT TTAGACACTC TATTTTCAA ATTTTATATA CTGTTTTAT 7620
 TGGGGAATAT GTCCAAATTG CTAGACACAT TCTAGTTCT GCTTGGAGA ATCCTACTTT 7680
 GTCTGAGATT GAGCGAGAG AATTGTTATC CTCCCATTA CTCAGCTCAG GAACATGGAG 7740
 CCTGTGTTT ATGCCAGTGT GTGTCTTCAT GCAGTCTCTC CACAGAGCA ACAGTAAGAA 7800
 CATTTCTGTT TTAATTTTCA TTTTAAAAA TTTTATTATC TCCAATTCAC CACTGCTCTC 7860
 GGAAGCAGA AGGAAGTTT CTGTGTGTG TGAAGAGCCT CTAGGCTAT AAGGCTTCCC 7920
 ACCCATACTC AGCTATAGCT ATTCAACAC ACCAGTTCT TCGAGTCTTT GTTCTGGGA 7980
 CTGATGTTT TGAACAATC AGGTCACTGA TAAAGTGGAA GGAATAAGAC ACTGTGTTCA 8040
 CACATCCAG CAACATCAAC TCACACTCAA TCCATGTGGT GATCCACAT CTGCTACTCT 8100
 TATCCACCA TGTGTCATT GAGAGCCTTT CTCAGAGACT CTTCTGTGTG TTTGATTGTG 8160
 CCGACCTCC CCGCCCTAG CTGGCTCTAA CACTAGCAT GACAGCCTCC AATCAGAAAG 8220
 GCAGGTAAAG GCACAGGCTG AGGAGATGG GCAGATACTG ACAGAAATTA AAGTAAAGGG 8280
 ATCTGAAAAG TAAAGAGCTC TTCTGATTC TCATCTTCT TTTTCTTAT TACAGGCAT 8340
 TGAACITGGC ACTTCTCTGA TTCTTTTGTG TCACATTTGA GTGCATTAGT TAAACCCCAA 8400
 GGGATGAGCT TGAATGGGAA TGTAGTGAAG GAGAGTATC TACTGTATTG TAATGTAAA 8460
 CAGCTACAGC CAGTATTTT GTAAGATTAT AAGTTGTTCA TTAATAAATC AGCACACAA 8520
 ATATGAA 8580

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